

Claxton, K., M. Deane, G. Shaw, S.H. Swan and M. Wrensch (1988). Pregnancy outcomes in Santa Clara County 1980-1985, Epidemiological Studies and Surveillance Section, California Department of Health Services.

ABSTRACT 1

Cardiac defects in relation to water contamination, 1981-1982, Santa Clara County, California. Epidemiological Studies Section, California Department of Health Services, January 1985.

In 1981 a leak of solvents from an underground storage tank was detected at the Fairchild Camera Company, an electronics manufacturing company in Santa Clara County. Solvents were then found in a well supplying water to the nearby community. Residents became concerned about a possible relationship between adverse reproductive outcomes and consumption of contaminated water. One resident wrote to the president of the Great Oaks Water Company (GOWC), of which Well #13 is a part, reporting nine cases which included several spontaneous abortions and birth defects. To investigate this issue the California Department of Health Services (CDHS) conducted two epidemiological studies: one, an examination of pregnancy outcomes; the other, which is reported here, a countywide study of major cardiac defects. This study, which compares rates of cardiac defects in the area served by the Great Oaks Water Company with rates in the rest of the county finds an excess of major cardiac defects in the service area of the Great Oaks Water Company. In 1981, ten babies with major cardiac defects were born to residents of this district. This represents an excess of six cases over the number expected in this period based on rates in the remainder of the county (relative risk estimate 2.6, significance probability 0.01). Available data suggest that this problem was limited to 1981. The distribution of cases throughout the county suggests that an excess of cardiac cases also exists in several of the census tracts surrounding the study area. A comparison of the distributions of the cardiac defect cases in time and space with the distribution patterns of the water supply and contaminants suggests that the December 1981 solvent leak is an unlikely explanation for this excess. Other possible explanations are discussed.

ABSTRACT 2

Pregnancy outcomes in relation to water contamination, 1980-1981, San Jose California, Epidemiological Studies Section, California Department of Health Services, January 1985.

On November 17, 1981 a leak of solvents from an underground storage tank was detected at the Fairchild Camera and Instrument Company in San Jose, California. Solvents were then found in Well #13 which supplied drinking water to the nearby Los Paseos community. A member of this community did an informal survey and identified a possible excess of congenital anomalies (primarily hear malformations) and spontaneous abortions. To address this concern, the California Department of Health Services carried out an epidemiologic investigation to determine: (1) whether there was an actual excess in the number of cases of spontaneous abortions and congenital anomalies, (2) whether any material risk factors could account for this cluster, and (3) whether this cluster was related to the leak into Well #13.

Pregnancy outcomes were assessed in two census tracts among women who conceived between

January 1, 1980, and December 31, 1981. One census tract included the Los Paseos area.. The other census tract, the control, had residents with similar demographic characteristics and received drinking water from another source which was found to be free of contamination when analyzed in 1982.

The Los Paseos area had a spontaneous abortion rate double that of the control area, a congenital anomaly rate triple that of the control area, and an absence of low birth-weight babies. For spontaneous abortions the odds ratio comparing the Los Paseos area with the control area, adjusting for nine possible risk factors using multiple logistic regression, was 2.4, and the 95 percent confidence interval was 1.3 to 4.2. For combined congenital malformations, the relative risk was 3.1, and the 95 percent confidence interval was 1.1. to 10.4. Assessment of the individual effects of confounding factors and recall bias suggests that no one of these could have produced this excess of spontaneous abortions and congenital malformations. There were no low birth-weight babies in the Los Paseos area while the control area had 4.9 percent (relative risk = 0.95 percent confidence interval 0-0.5). The average birth-weights were similar for the two areas.

The actual exposures to chemical contaminants could not be determined in 1980 and 1981; therefore, the relation between the excess of spontaneous abortions and congenital anomalies, and the leak of chemicals into Well #13 is unknown.

The investigators conclude: (1) that spontaneous abortions and congenital anomalies in the Los Paseos area did occur above the expected rate; (2) that the excess cannot be attributed to differences in maternal risk factors between the two areas; and (3) that the indirect evidence about the extent and timing of exposure to contaminated water within the Los Paseos area was sufficient to determine whether the leak of chemicals into Well #13 caused the excess.